

# Data Analysis 2

Data Collection + Sampling

GENERAL

























MATHEMATICS

Name: \_\_\_\_\_

# CAPACITY MATRIX - GENERAL MATHEMATICS

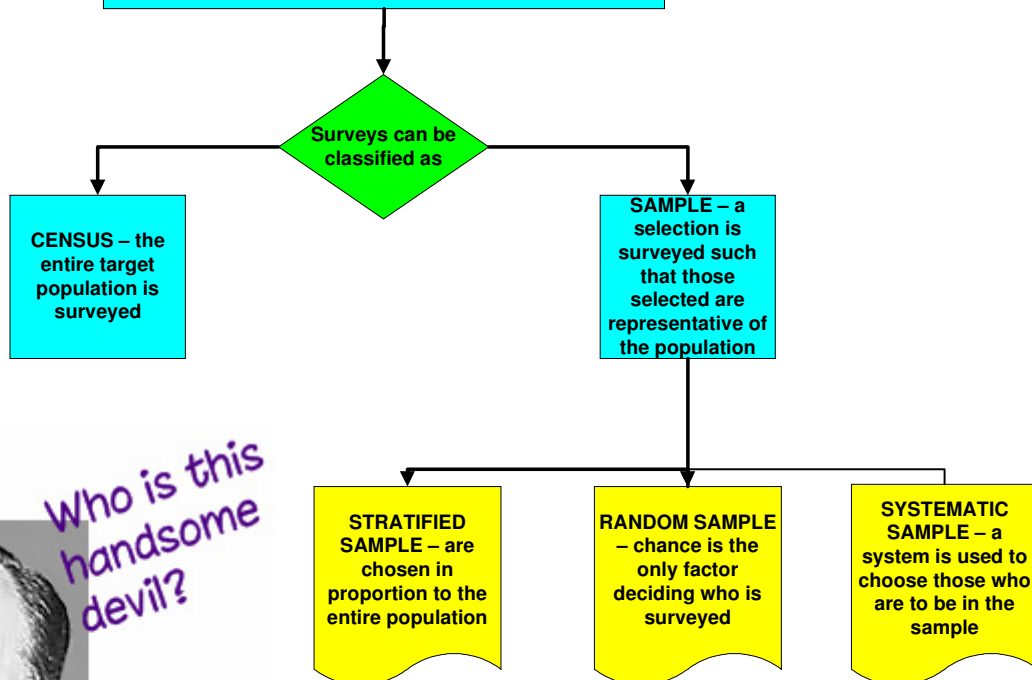
## TOPIC: Data Analysis 1 & 2

3 weeks

CONTENT	CAPACITY BREAKDOWN!	DONE IT!!!!	GOT IT!!!!	ON MY WAY!	WORKING ON IT!	HELP!!!!
1. identification of the target population 2. Population survey or sampling 3. The purpose of a sample	Ex 6A Q1-5 Ex 6B Effective surveys					
4. generating random numbers with a table or a calculator to assist in establishing random samples	Ex 6A Q6-13					
5. Discuss bias	Ex 6C S/S Creating misleading graphs pp 182-3					
6. Classification of data as:- <b>Quantitative</b> and <b>Categorical</b> 7. distinguishing between the following sample types: random, stratified, systematic	Ex 6D					
8. describing and using the 'capture-recapture' technique for estimating the size of populations	Ex 6E Group activity 1					
9. use of the principles for effective questionnaire design	Task 2					

# GATHERING DATA

## Classifying Surveys



*Who is this handsome devil?*

eg In each of the following, state if the information was obtained by census or sample.

- A school uses the roll to count the number of students absent each day
- The television ratings, in which 2000 families complete a survey on what they watch over a one week period.

# Effective surveys!

## Bell times Continuum

NAME: \_\_\_\_\_

The following **survey** is to be run to find out if the school community would like to change the existing start time to the school day.



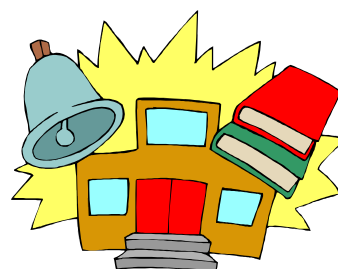
**Bell Times Survey:**  
When would you like the start of the school day (and all other times) to be:

○ ———— ○ ———— ○ ———— ○ ———— ○

30 min earlier   15 min earlier   Same as now   15 min later   30 min later

Please tick in one place on the continuum.

1. Complete the above survey and return to your teacher for compilation (please note that you must have your name on the sheet!)
2. Split into groups and discuss the following:
  - a. How you would display the results;
  - b. An analysis of the results;
3. In your group, discuss concerns you have with the survey.
4. Given the purpose of the survey, do you think the class results are a fair sample? Justify your answer.
5. If you were completing the survey again, would you change the survey form to improve it? If so, give examples of the changes.
6. Design a survey that would survey the original question BUT would be more effective.



eg Three students from a school are to be selected to participate in a statewide survey of school students. There are 830 students at the school. To choose the participants, a random number generator is used with the results 0.983, 0.911 and 0.421. What are the toll numbers of the students who should be selected?

eg Amie is conducting a survey of school students. At his school, 47% of the population are male and 53% are female. If Amie decides to survey 70 students, how many students of each sex should she choose if she decides to use a stratified sample?

eg The table at right displays the enrolment at a high school. Sarah is conducting a music survey for the school disco. She plans to survey 60 students. Show how Sarah should break down her sample in terms of year and sex.

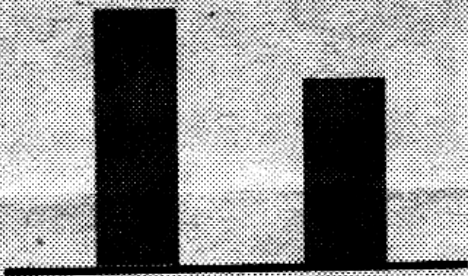
<b>YEAR</b>	<b>BOYS</b>	<b>GIRLS</b>
7	192	204
8	170	174
9	184	176
10	160	148
11	142	150
12	138	130
<b>TOTAL</b>		
<b>GRAND TOTAL</b>		

# BIAS IN STATISTICS

## Readers' Poll

**This week's internet poll**  
Will the Liberal Government be re-elected after the November 24 election

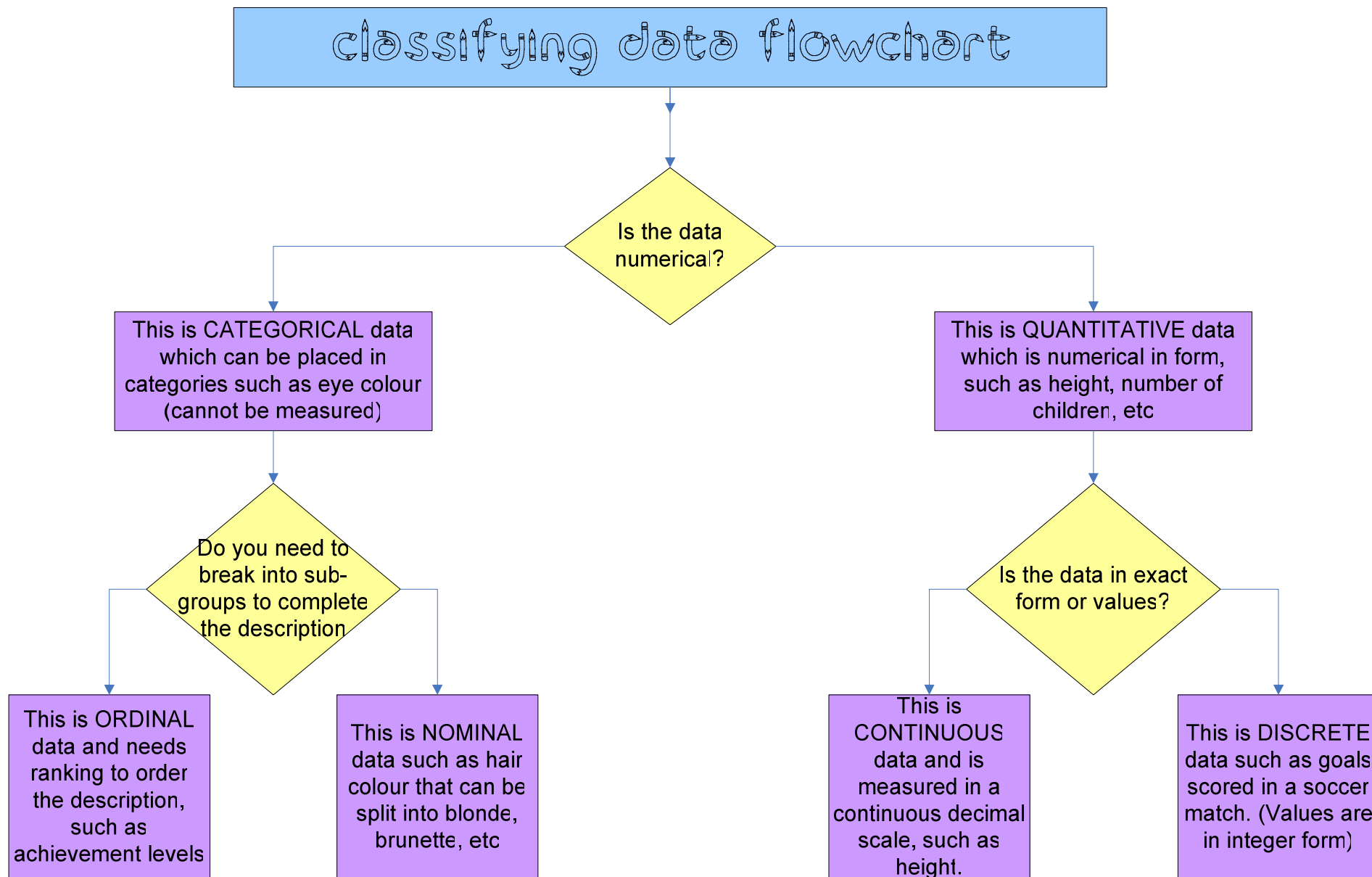
*Now read a little closer!!!*



Results:  
Yes 60% No 40%  
Total votes: 5

Have your say on next week's question at  
[www.merimbula.yourguide.com.au](http://www.merimbula.yourguide.com.au)

Results in next week's paper





# Task two opinion polling

OTRNET publications Data Collection and Analysis 1

- Task 1:** Think of an issue about which you would like to know the opinions of students of your age. It might be how they feel about the environment, or a particular TV show, or the place you live or ... Write down this issue.
- Task 2:** Write a question that could find out the opinions of people about this issue. Think about whether you want your question to be yes/no, have a multiple choice answer or have a written response.
- Task 3:** Look at your question and plan how you are going to represent and analyse the responses. Change the type of question if you need to.
- Task 4:** Review your question with two other students. Decide if there are any problems with the way it is worded. Is it **biased**, is it difficult to understand, will it be difficult to record the responses? Rewrite your question if necessary.
- Task 5:** Design a response form for your question. It should contain the question and a place for the response. If you are using yes/no or a multiple choice this should be included. Do you wish to collect any other information like name, age etc? Draw up this response form.
- Task 6:** Decide on a **sample** group to carry out your **polling** with. It may be your maths class. Comment on how well your **sample** group represents all students of your age.
- Task 7:** Make copies of your form for all of the respondents (people who respond).
- Task 8:** Carry out the **polling** of all of the **sample** group. Collect up your **data** for analysis.
- Task 9:** Select a **graphical** representation that would suit your **data**. Draw up a **graph** showing the **data** you collected.
- Task 10:** Write a summary of what you found. Calculate any values that may help people interpret your **data**.
- Task 11:** Comment on how you would improve your **polling** if you repeated this application.
- Task 12:** Comment on the validity of your results;
- was your question fair?
  - was your **sample unbiased**?
  - was your **data** collection method accurate?

